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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,033	08/04/2003	Chien-Meen Hwang	95-538	4695

20736 7590 04/18/2007  
MANELLI DENISON & SELTER  
2000 M STREET NW SUITE 700  
WASHINGTON, DC 20036-3307

EXAMINER
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WANG, TED M

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

SK

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/633,033		HWANG ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Ted M. Wang		2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, filed on 1/26/2007, with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

### ***Specification***

2. The disclosure is objected to because of the following informalities:
  - Page 8, line 1, change "then" to --- than ---.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the instant application in view of Carsello (US 6,370,211).
  - With regard claim 1, the admitted prior art of the instant application teaches a method in an OFDM direct conversion receiver (Fig.1 and page 1 line 21) configured for receiving a wireless signal (Fig.1 element 12 input signal), the method comprising:

recovering first and second components from the wireless signal (Fig.1 element 12 input signal) by mixing (Fig.1 elements 18a and 18b and page 1 line 23) the wireless signal with first (Fig.1 element 16 output to the input of mixer 18a) and second (Fig.1 element 22 output to the input of mixer 18b) carrier frequency signals, respectively (page 1 lines 21-25), at the analog front end (Fig.1 elements 12-20b), the second carrier frequency signal phase-shifted by a prescribed amount relative to the first carrier frequency signal (Fig.1 elements 16, 18a, 18b and 22 and page 1 lines 21-25);

filtering a pilot carrier from each of the first and second components (Fig.1 elements 20a and 20b, where it is inherent that the pilot carrier can be removed by the low pass filter, 20a and 20b, as admitted by the instant application, page 7, line 33-34, "Note that the pilot notch filter 100 also can be implemented as a low pass filter" as recited.) to obtain filtered first and second components (Fig.1 elements 20a and 20b outputs (I and Q), respectively;

estimating amplitude and phase imbalances between the filtered first and second components according to a time domain based estimation algorithm (page 2 lines 10-16); and

compensating for the amplitude and phase imbalances in the recovered first and second components (page 2 lines 10-16).

The admitted prior art of the instant application subject matter as described in the above paragraph except for specifically teaching the filtered first and second components having equal power distribution.

However, Carsello teaches filtering a DC notch filter (Fig.3 element 310) connected to a low pass filter (Fig.3 element 308) to remove DC distortion (column 4 lines 29-30) such that the filtered first and second components having equal power distribution so that the receiver performance can be improved since the equal power distribution is due to the filtering of the pilot carrier and the DC components as described in the page 8, lines 7-8, of the instant application.

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the DC notch filter (Fig.3 element 310) as taught by Carsello by connecting the notch filter right after the low pass filters, 20a and 20b, of the admitted prior art of the instant application, respectively, in order to remove DC distortion so that the receiver performance can be improved.

- With regard claim 2, the admitted prior art of the instant application further discloses wherein the filtering further includes suppressing any pilot energy from the first and second components (Fig.1 elements 20a and 20b, where it is inherent that the pilot energy of the first and second components is suppressed since the pilot carrier has been removed by the low pass filter, 20a and 20b, respectively).
- With regard claim 3, the modified circuit of the admitted prior art of the instant application and Carsello further discloses wherein the filtering further includes filtering any DC energy from the first and second components (Fig.3 element 310) to remove DC distortion (column 4 lines 29-30) since the DC component

has been removed by the DC notch filter, 310, respectively, as addressed in the above paragraph (claim 1)).

- With regard claim 4, the limitation of “wherein the filtering includes suppressing the pilot energy and the DC energy using a pilot notch filter and a DC notch filter, respectively” has been addressed in the above paragraphs (claims 2 and 3).

Since the pilot carrier is filtered out by the low pass filters 20a and 20b, respectively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to consider that the low pass filters, 10a and 20b, been used in the modified circuit of the admitted prior art of the instant application and Carsello would get the same performance result as that of a notch filter (It also admitted by the instant application, page 7, line 33-34, “Note that the pilot notch filter 100 also can be implemented as a low pass filter” as recited.)

- With regard claim 5, which is a receiver claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 6, which is a receiver claim related to claim 2, all limitation is contained in claim 2. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 7, which is a receiver claim related to claim 3, all limitation is contained in claim 3. The explanation of all the limitation is already addressed in the above paragraph.

- With regard claim 8, which is a receiver claim related to claim 4, all limitation is contained in claim 4. The explanation of all the limitation is already addressed in the above paragraph.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

6. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

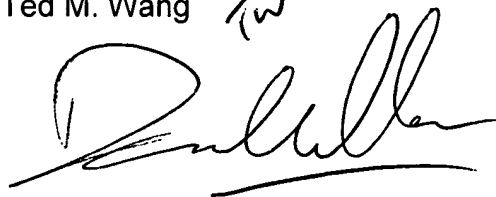
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2611

Ted M. Wang *tw*

A handwritten signature in black ink, appearing to read 'Ted M. Wang', with a stylized flourish at the end.

**DACHA**  
**PRIMARY EXAMINER**